

# AquaBlok™

*In Situ* Barrier  
Technology

8/20/97

# Presentation Objectives


- Managing contaminated sediments
- Management through barrier (cap) placement
- Overview of the AquaBlok *in situ* capping technology
- Functions of AquaBlok caps
- Product deployment
- Product Applicability to different ecosystems

# Approaches to Managing Contaminated Sediments

- Sediment removal & *ex situ* management\*
- *In situ* management
  - Natural recovery
  - *In situ* capping
  - *In situ* treatment

# Sediment Management by *In Situ* Capping

- Typical functions of *in situ* sediment caps:
  - physical isolation of contaminated sediment from benthic environment
  - stabilization of contaminated sediments, minimizing its re-suspension and transport
  - reduction of flux (movement) of dissolved contaminants into water column
  - *Provide substrate for faunal and floral colonization*

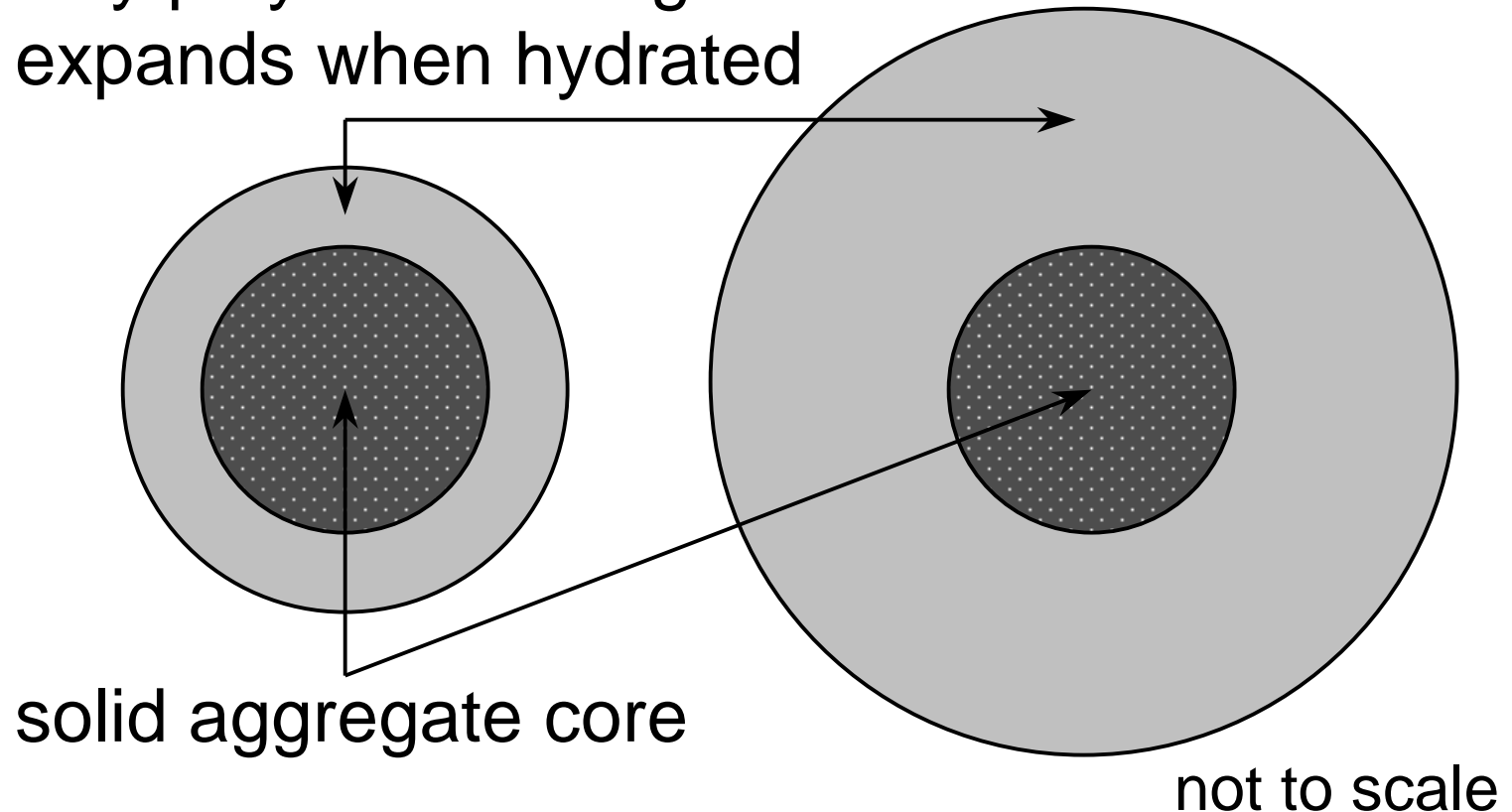
The background is a stylized illustration. The top portion features blue wavy lines representing water. Below this is a thick, dark grey layer with a scalloped upper edge, representing a capping material. Within this grey layer are numerous small, light brown circular spots. The bottom portion of the image is a dark brown area containing many small red circles with a cross-hatch pattern, representing a contaminated zone. Several dark brown upward-pointing arrows are visible at the bottom, indicating the direction of flow or application.

# AquaBlok

## *In Situ* Capping Technology

# AquaBlok

clay/polymer coating  
expands when hydrated



**application through  
water column**

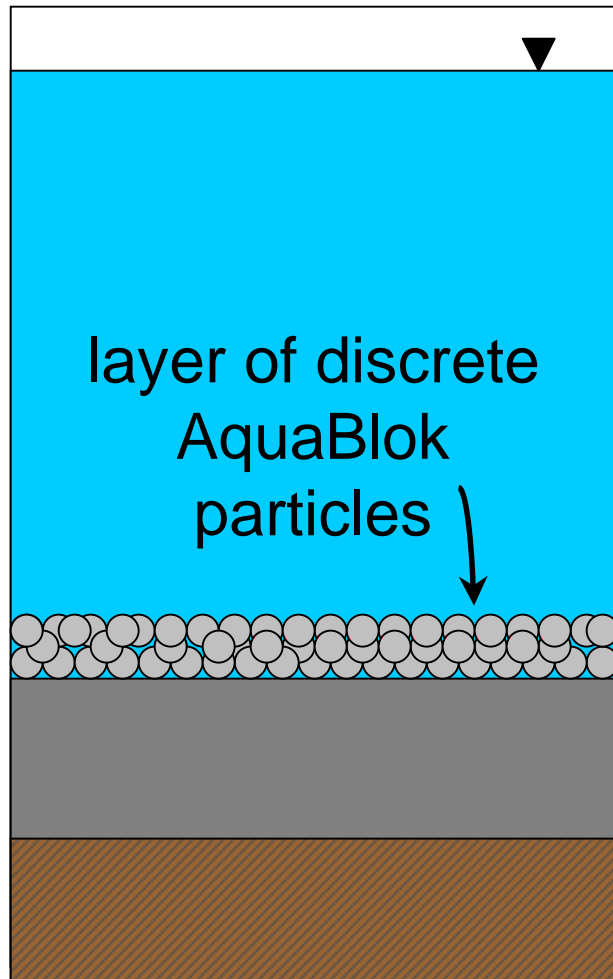
**sediment**

MAR

AquaBlok  
Before Hydration

time →

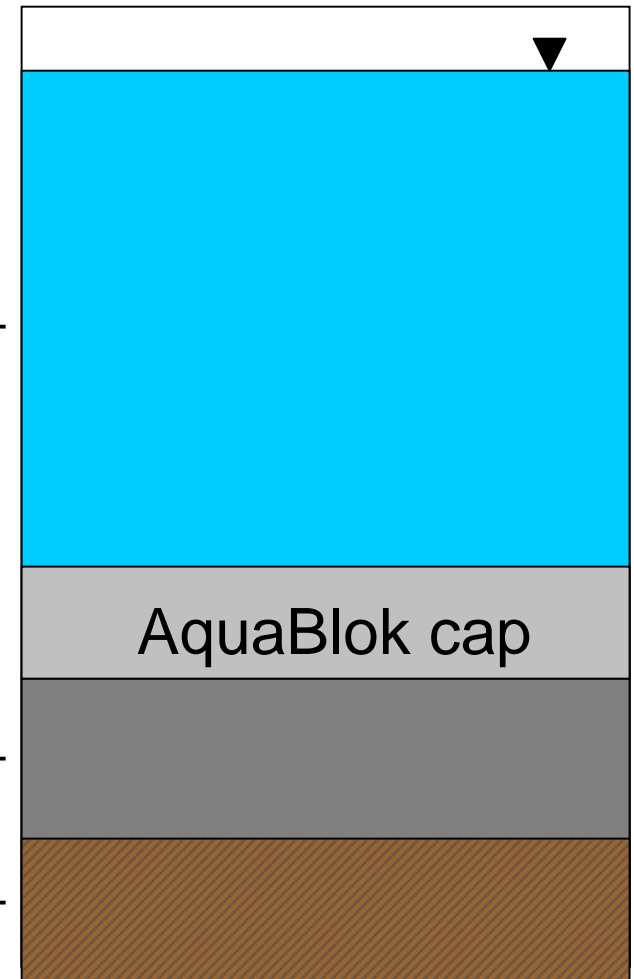
AquaBlok After  
Hydration and  
Expansion



water  
column

contaminated  
sediment

substrate



AquaBlok cap

not to scale



The background of the slide is a stylized illustration. The top portion features blue wavy lines representing water. Below this is a thick, dark grey or black layer with a scalloped upper edge and small, light-colored circular spots. The bottom portion is a dark brown area filled with numerous small red circles, each containing a white cross. Several dark brown upward-pointing arrows are visible at the bottom of the slide.

# Functions of AquaBlok Caps



*water  
column*

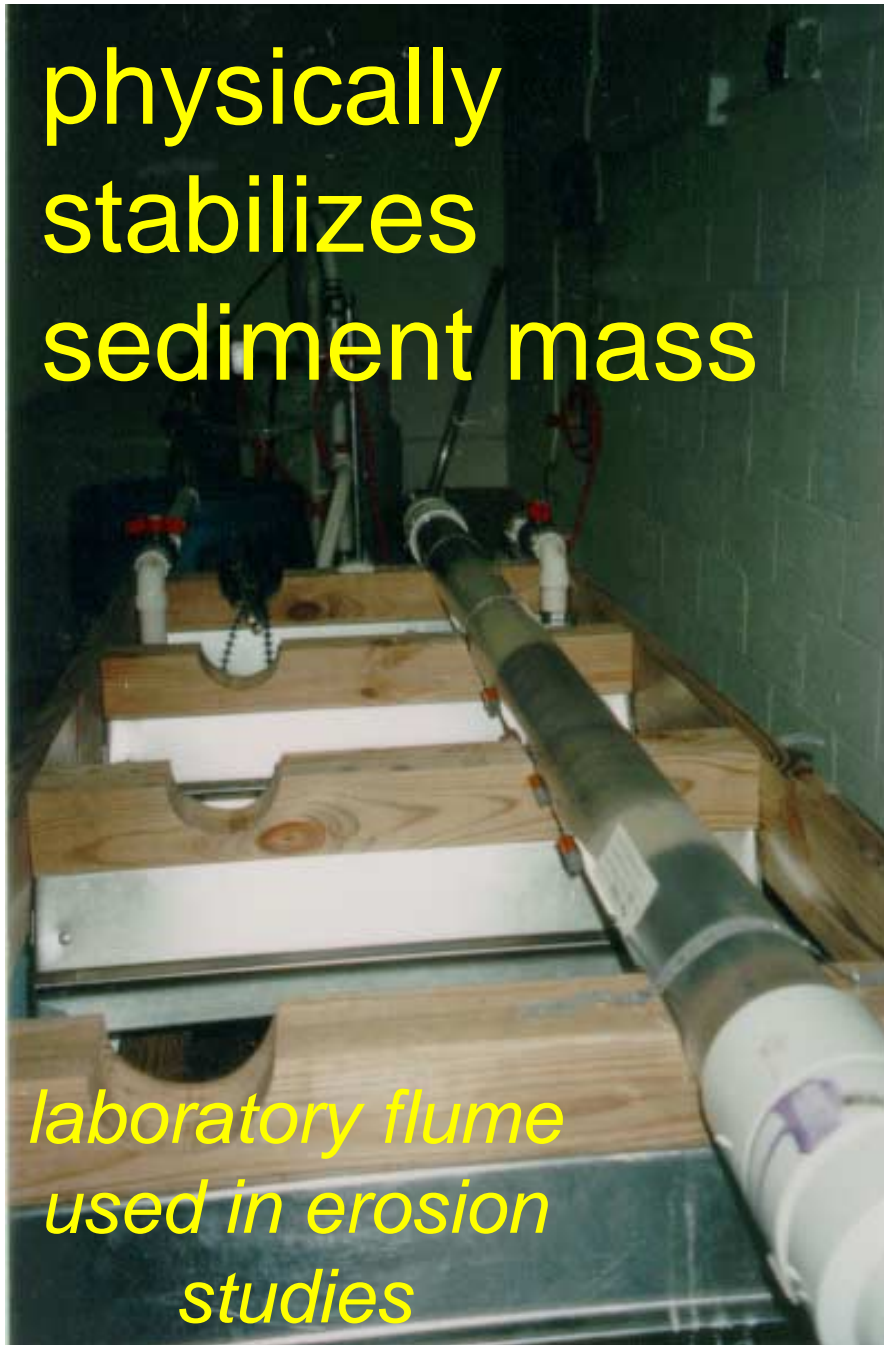
*hydrated  
AquaBlok  
cap*

*sediment*

provides  
protected  
habitat for  
benthic  
organisms

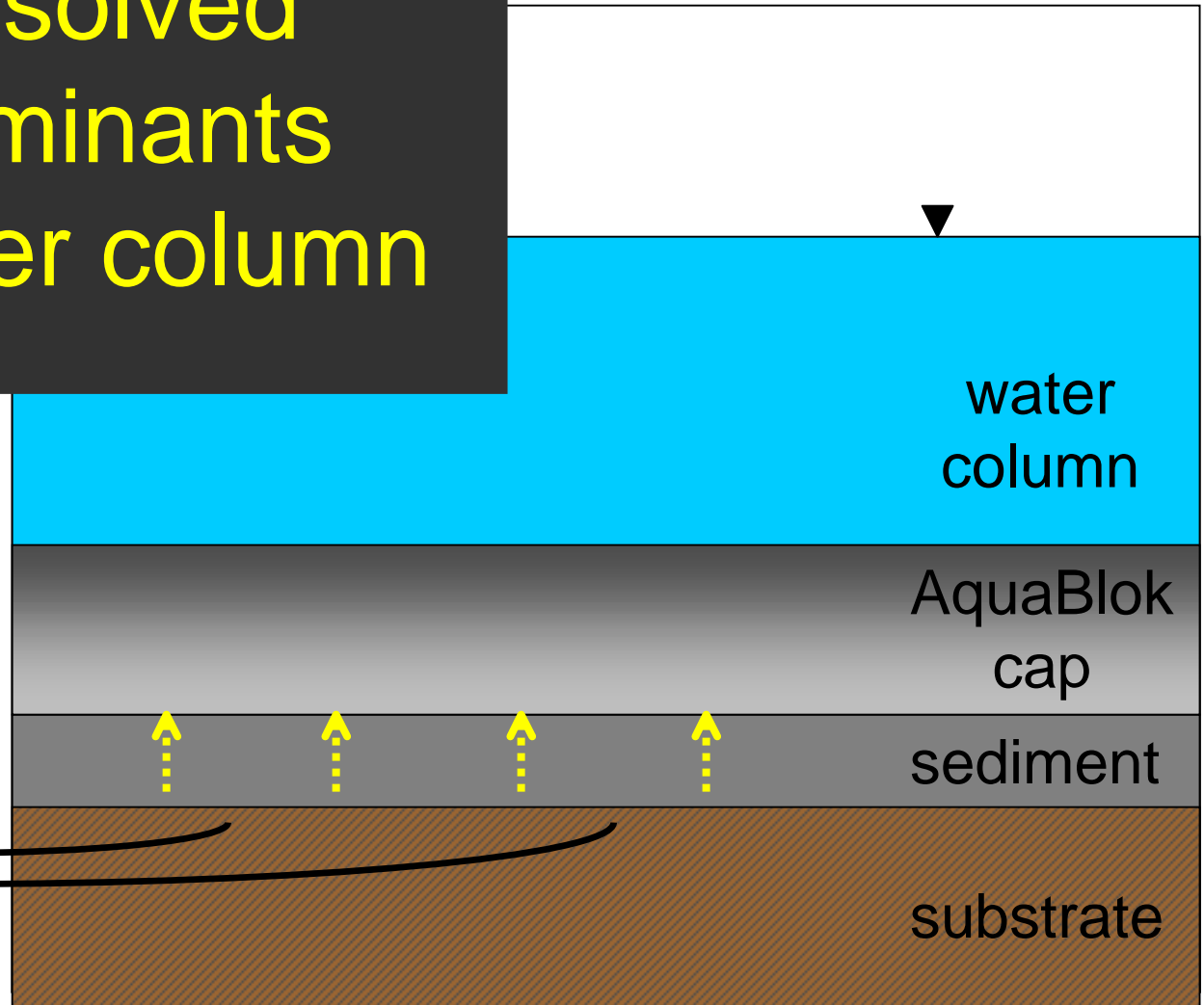
physically  
stabilizes  
sediment mass

*laboratory flume  
used in erosion  
studies*



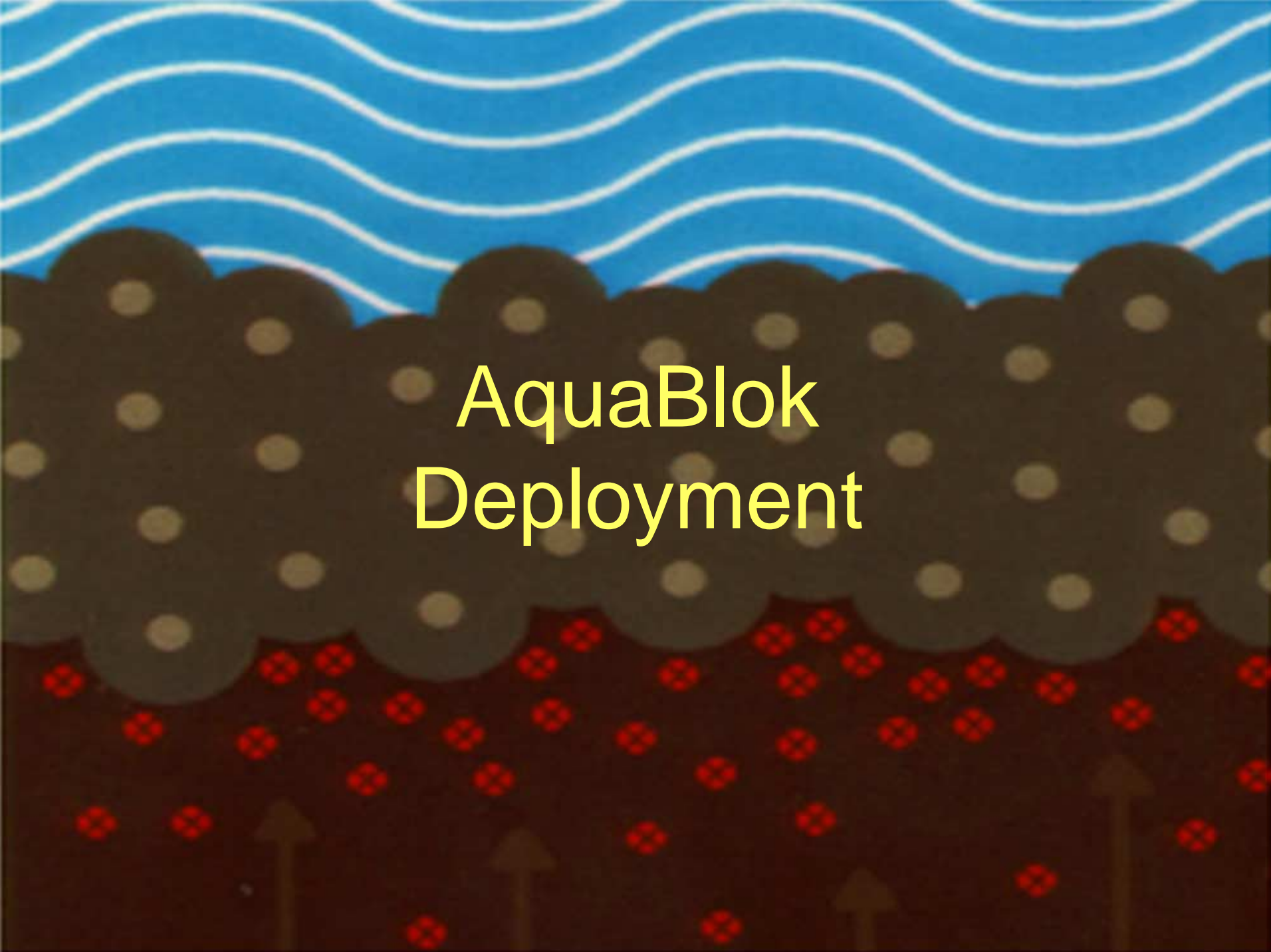
reduces movement  
of dissolved  
contaminants  
into water column

*low-permeability,  
reactive cap  
limits upward  
diffusive and  
advective  
contaminant  
flow*



not to scale





# AquaBlok Deployment

# Articulating, Telescoping Conveyor (Barge- or Shore-Based)



# Helicopter with Specially Designed Material Drop Bags



# Crane + Clamshell Bucket (Shore- or Barge-Based)







# AquaBlok Applicability to Different Ecosystems

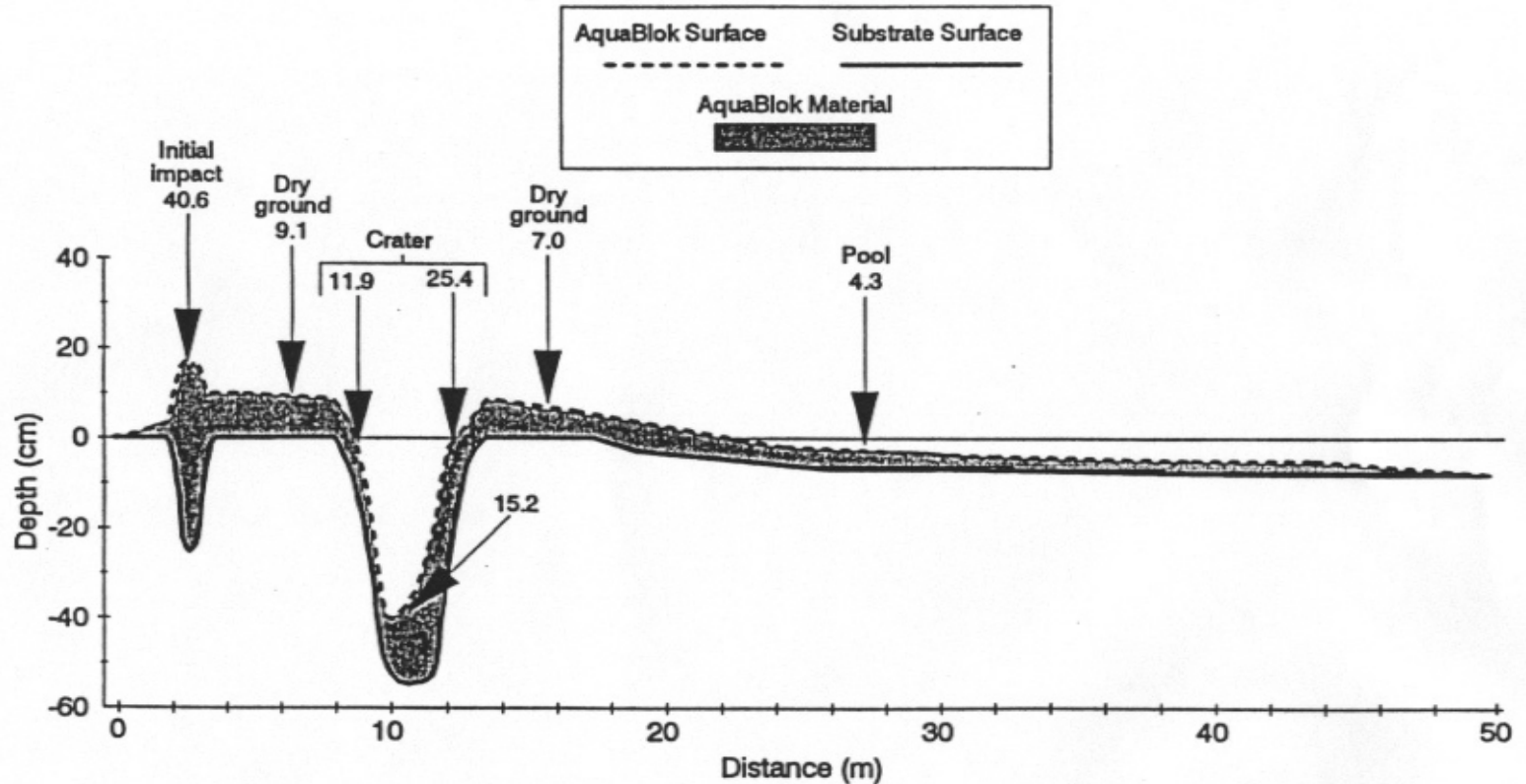
# Wetland Ecosystems



Eagle River Flats, Alaska

# Eagle River Flats, Alaska

## AquaBlok Coverage Across Treatment Pen





# Eagle River Flats, Alaska



treatment  
area prior  
to capping

treatment  
area ~1 year  
after capping



# Eagle River Flats, Alaska



vegetation  
growth ~5 yrs  
after AquaBlok  
capping

# Deepwater Ecosystems

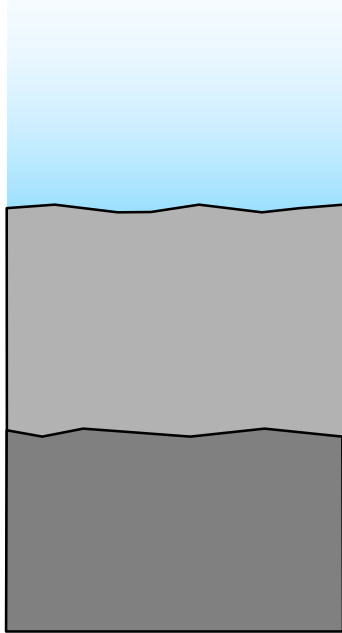


# Ottawa River Project

## AquaBlok™-Based Cap Designs

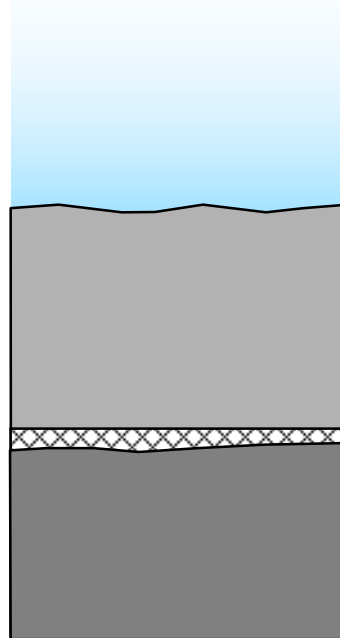
### ***Section A***

target  
5" to 6"



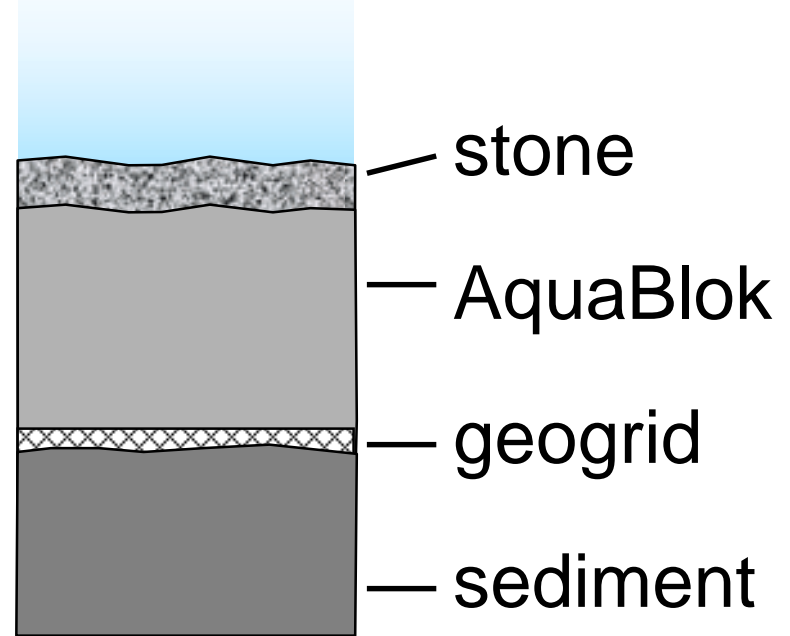
### ***Section B***

target  
5" to 6"



### ***Section C***

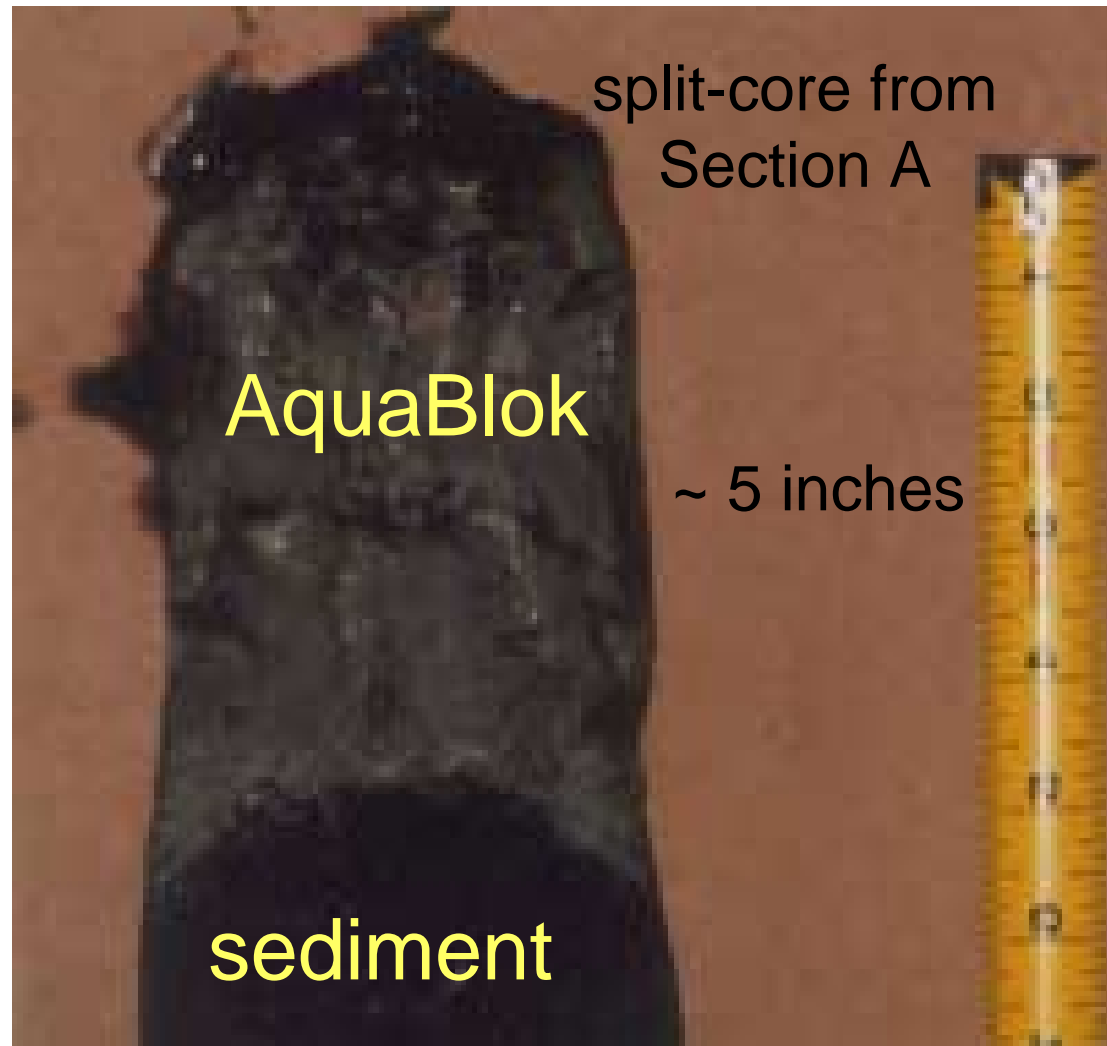
target  
5" to 8"



not to scale

# Ottawa River Project

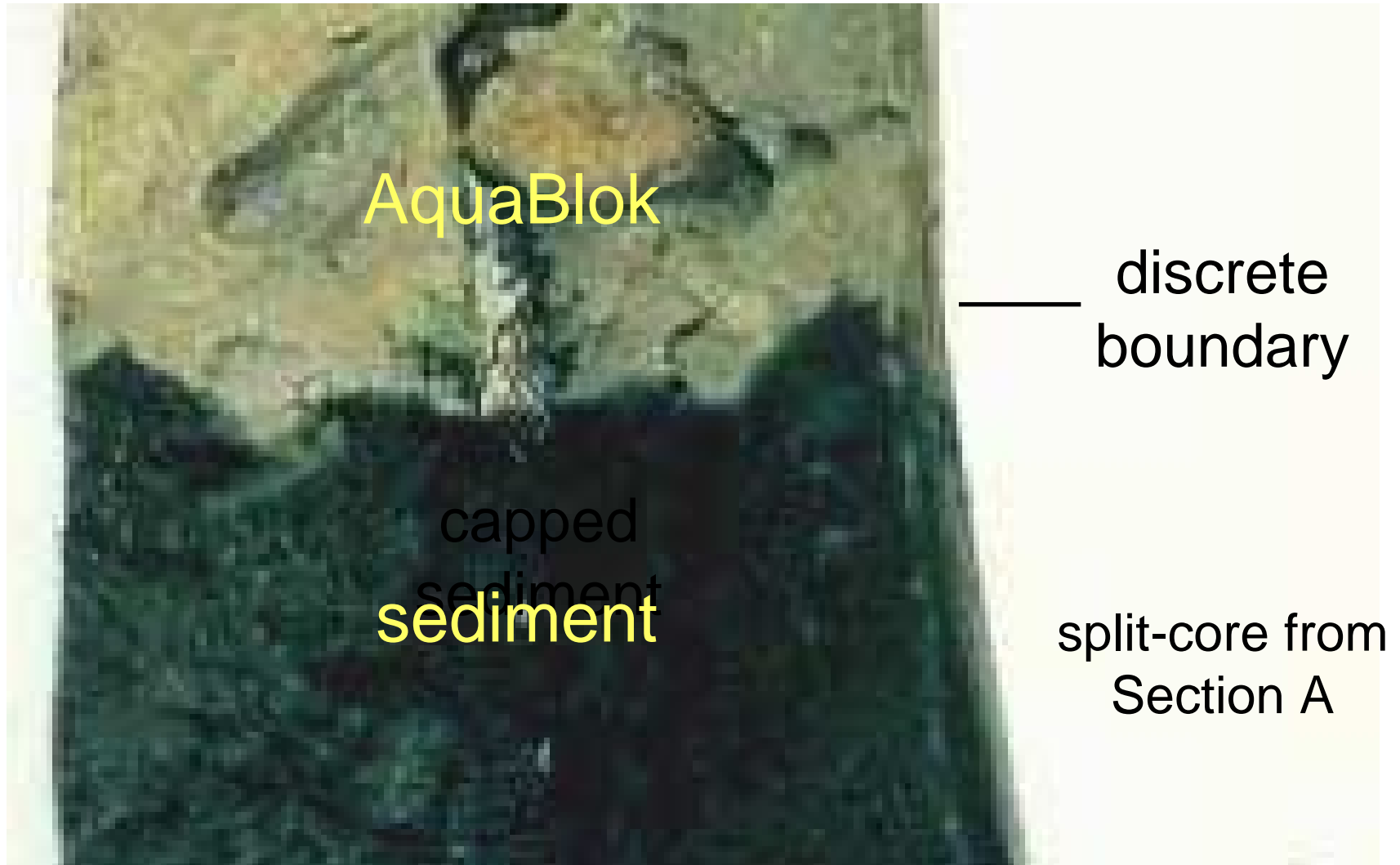
## Evaluation of Split-Core Samples





# Ottawa River Project

## Evaluation of Split-Core Samples



# Ottawa River Project



AquaBlok™ was developed  
by New Waste Concepts, Inc.  
(NWC) and is marketed by  
AquaBlok, Ltd. Hull &  
Associates, Inc. provides  
technical support to  
AquaBlok, Ltd.